

# SEMICONDUCTOR LASER ELEMENT AND ITS MANUFACTURING METHOD

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**Inventor:** HAYASHI NOBUHIKO; OTA KIYOSHI  
**Applicant:** SANYO ELECTRIC CO LTD  
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## Abstract of JP2000183451

**PROBLEM TO BE SOLVED:** To provide a nitride system semiconductor laser element, where a resonator surface that is vertical to the surface of a substrate, can be easily formed and yield is improved, and to provide its manufacturing method.

**SOLUTION:** A step part 100 with a side surface 101 and a bottom surface 102 in parallel with the direction  $\langle 11\bar{2}0 \rangle$  of a sapphire substrate 1 is formed on a surface (0001) of the sapphire substrate 1. A GaN(gallium nitride) based semiconductor layer 15 containing an MQW(multiple quantum well) luminous layer 7 is subjected to the epitaxial growth on the upper surface of the sapphire substrate 1 and the side surface 101 and the bottom surface 102 of the step part 100. During the crystal growth of the GaN system semiconductor layer 15, a surface  $\{11\bar{2}0\}$  that is completely vertical with respect to the surface (0001) of the sapphire substrate 1 is formed on the side surface 101 of the step part 100. The surface  $\{11\bar{2}0\}$  of the GaN system semiconductor layer 15 on the side surface 101 of the step part 100 is used as a resonator surface 200.

